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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
FASTOVSKY, LEONID M	
ART UNIT	**PAPER NUMBER**
3742	

DATE MAILED: 12/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/831,887	ITO ET AL.	
	Examiner	Art Unit	
	Leonid M Fastovsky	3742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-9,11-24 and 27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-9,11-24,27 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *24 September 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20040419,20040927*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Double Patenting

2. Claims 1-5, 7-9, 11-24 and 27-28 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-28 of copending Application No. 10/387,452. Although the conflicting claims are not identical, they are not patentably distinct from each other because they claim the same structure elements of the invention except a disc shape of the ceramic substrate. It would be obvious to modify the present invention to include a disc shape of the ceramic substrate in order to diversify use of the ceramic heater.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4, 9, 21-23 and 27-28 are rejected under 35 U.S.C. 102(b) as being anticipated by Kubota et al (5,643,483).

Kubota teaches a ceramic heater for heating a semiconductor wafer (col. 1, lines 5-10) comprising a ceramic substrate 1 with thickness of 5 mm (col. 4, lines 55-60), having a work surface (at the bottom) which is configured to contact directly with a work to be heated, and a heating element 2 disposed on the ceramic substrate, wherein the work-heating surface has a surface roughness of Rmax=0.01 to 0.1 micron (col. 4, lines 5-16), and the ceramic substrate contains silicon nitride that is other than its dominant element (col. 3, lines 10-15).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 5, 7, 11 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al in view of Miyata (2002/0027130).

Kubota discloses substantially the claimed invention including the thickness of the substrate, but does not teach that the nitride ceramic contains one of the elements selected from Na, B, Y, Li and Ca. Miyata teaches element **Ca** and **Y** (Page. 5, paragraph 98) that is in amount not less than 0.5% by weight. I would have been obvious to one having ordinary skill in the art (Page 2, Paragraph 36) to modify Kubota's

invention to use elements **Ca** and **Y** in an amount not less than 0.5% by weight to accelerate wettability of ceramics as taught by Miyata (Page 5, paragraph 98).

7. Claims 5, 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota in view of Noda et al (5,753,893).

Kubota discloses substantially the claimed invention, but does not disclose that a weight of elements Y, Ca is not less than o.1%. Noda et al discloses a weight of element **Y** to be in a range of 0.3 to 13% (col. 13, lines 35-55). It would have been obvious to one having ordinary skill in the art to modify the invention of Kubota to use elements Y or Ca by weight to improve the relative density and durability as taught by Noda et al (Col. 9, lines 22-26).

8. Claims 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubotai in view of Yamada et al (5,998,320).

Kubota teaches substantially the claimed invention, but does not disclose that a weight of elements Na and B is not less than 0.05 ppm. Yamada et al teaches in Col. 4, lines 42-49 minimizing the amount of metal and other elements belonging to Groups 1a VIIa, VIII, Ib and IIb and IVb respectively to less than 100 ppm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Na or B in the amount of not less than 0.05 ppm in order to control a volume of resistivity as taught by Yamada (Abstract).

9. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota in view of Yamada et al.

Kubota in view of Miyata or Noda teaches substantially the claimed invention, but does not disclose that a weight of elements Na and B is not less than 0.05 ppm. Yamada et al teaches in Col. 4, lines 42-49 minimizing the amount of metal and other elements belonging to Groups 1a VIIa, VIII, Ib and IIb and IVb respectively to less than 100 ppm. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use Na or B in the amount of not less than 0.05 ppm in the heater of Kubota in view of Miyata or Noda in order to control a volume of resistivity as taught by Yamada (Abstract)

10. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota in view of Ushikawa (6,140,256).

Kubota discloses substantially the claimed invention, however Kubota does not teach that a semiconductor wafer is heated while being supported by pins at a distance of 1 micron to 5000 microns (5 mm) apart from the work-heating surface of the ceramic heater. Ushikawa discloses pins 41, 42 and 43 supporting a wafer W at a distance of from 0.2 mm to 2 mm (Col. 4, lines 30-44). It would have been obvious to one having ordinary skill in the art to modify the invention of Kubota to use supporting pins at a distance from 1 micron to 5000 micron in order to improve a process of wafers heating as taught by Ushikawa (Abstract).

11. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota in view of Miyata or Noda and further in view of Ushikawa.

Kubota in view of Miyata or Noda discloses substantially the claimed invention, however Kubota does not teach that a semiconductor wafer is heated while being supported by

pins at a distance of 1 micron to 5000 microns (5 mm) apart from the work-heating surface of the ceramic heater. Ushikawa discloses pins 41, 42 and 43 supporting a wafer W at a distance of from 0.2 mm to 2 mm (Col. 4, lines 30-44). It would have been obvious to one having ordinary skill in the art to modify the invention of Kubota in view of Miyata or Noda to use supporting pins at a distance from 1 micron to 5000 micron in order to improve a process of wafers heating as taught by Ushikawa (Abstract).

12. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota et al in view of Nozaki et al (5,264,681).

Kubota discloses substantially the claimed invention, but does not disclose a thermal conductivity of a ceramic substrate. Nozaki discloses that the thermal conductivity of a ceramic heater is about 170 W/mK (Col 7, lines 1-5). It would have been obvious to one having ordinary skill in the art to modify Kubota's invention to include a thermal conductivity in a range from 130 to 200 W/mK because the aluminum nitride is the highest in these thermal coefficients as taught by Nozaki.

13. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota in view of Miyata or Noda and further in view of Nozaki.

Kubota in view of Miyata or Noda discloses substantially the claimed invention, but does not disclose a thermal conductivity of a ceramic substrate. Nozaki discloses that the thermal conductivity of a ceramic heater is about 170 W/mK (Col 7, lines 1-5). It would have been obvious to one having ordinary skill in the art to modify Kubota's invention in view of Miyata or Noda to include a thermal conductivity in a range from 130 to 200

W/mK because the aluminum nitride is the highest in these thermal coefficients as taught by Nozaki.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leonid Fastovsky whose telephone number is 571-272-4478. The examiner can normally be reached on Monday-Thursday (7:30-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robin Evans can be reached on 571-272-4777. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7764 for regular communications and (703) 308-3463 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0861.

Leonid Fastovsky

Examiner

Art Unit 3742

lmf

12/13/04

ROBIN O. EVANS
PRIMARY EXAMINER

12/13/04